

WHAT IS CLAIMED IS:

1. A data transmit/receive device, in which a plurality of devices having a data transmission function or a data receiving function and an asynchronous communication function are connected to a bus,

wherein each of the plurality of devices has its own device-specific information as well as a function for reading other device-specific information; and

wherein each of the plurality of devices comprises a recognition unit that, if a device having the data transmission function or the data receiving function, the asynchronous communication function, and the reading function but not belonging to said plurality of devices has been added as a transmitting device within a topology showing the connection among said plurality of devices while a device functioning as a receiving device transmits/receives data to/from another transmitting device, recognizes with the reading function the transmitting device that had been transmitting data originally, and continues the transmitting/receiving of data to/from this confirmed transmitting device.

2. A data transmit/receive device, in which a plurality of devices having a data transmission function or a data receiving function and an asynchronous communication function are connected to a bus, and real-time data are

transmitted/received between two of said plurality of devices,

wherein each of the plurality of devices has its own device-specific information as well as a function for
5 reading other device-specific information; and

wherein each of the plurality of devices comprises a recognition unit that, if a device having the data transmission function or the data receiving function, the asynchronous communication function, and the reading function but not belonging to said plurality of devices has been added as a transmitting device within a topology showing the connection among said plurality of devices while a device functioning as a receiving device transmits/receives data to/from another transmitting device,
10 recognizes with the reading function the transmitting device that had been transmitting data originally, and continues the transmitting/receiving of data to/from this confirmed transmitting device.

20 3. A data transmit/receive method, in which a plurality of devices which have a data transmission function or a data receiving function and an asynchronous communication function are connected to a bus,

wherein each of the plurality of devices has its own
25 device-specific information as well as a function for reading other device-specific information;

the method comprising:

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if a device having the data transmission function or the data receiving function, the asynchronous communication function, and the reading function but not belonging to said plurality of devices has been added as a transmitting device within a topology showing the connection among said plurality of devices while a device functioning as a receiving device transmits/receives data to/from another transmitting device, said receiving device recognizing with the reading function the transmitting device that had been transmitting data originally; and

 said receiving device continuing the transmitting/receiving of data to/from this recognized transmitting device.

15 4. A data transmit/receive method, in which a plurality of devices which have a data transmission function or a data receiving function and an asynchronous communication function are connected to a bus, and real-time data are transmitted/received between two of said plurality of 20 devices,

 wherein each of the plurality of devices has its own device-specific information as well as a function for reading other device-specific information;

 the method comprising:

25 if a device having the data transmission function or the data receiving function, the asynchronous communication function, and the reading function but not belonging to

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said plurality of devices has been added as a transmitting device within a topology showing the connection among said plurality of devices while a device functioning as a receiving device transmits/receives data to/from another 5 transmitting device, said receiving device recognizing with the reading function the transmitting device that had been transmitting data originally; and

10 said receiving device continuing the transmitting/receiving of data to/from this recognized transmitting device.

15 5. A data transmit/receive method, wherein:

when at least one transmitting device and one receiving device are connected to a bus,

15 the receiving device reads in device-specific device information from said transmitting device, and then

the receiving device receives data from the transmitting device via the bus;

20 when another transmitting device is connected to the bus while the transmitting device and the receiving device transmit/receive data causing a bus reset, the receiving device reads in device-specific information from the transmitting device that is transmitting data, and compares this read-in device-specific information with the 25 previously read-in device-specific information;

if the transmitting device that is transmitting data is different from the transmitting device that had been

transmitting data originally, then the receiving device reads out the device-specific information of all devices connected to the bus, compares the device-specific information with the corresponding previously read-in 5 device-specific information, and recognizes the transmitting device that had been transmitting data originally;

then, if the transmitting device that had been transmitting data originally is transmitting data, the receiving device continues the receiving of data from the transmitting device that had been transmitting data originally.

6. The data transmit/receive method according to Claim 5, 15 wherein the data that the transmitting device transmits to the receiving device are encrypted;

wherein after receiving the data from the transmitting device, the receiving device obtains decryption information with a device authentication 20 process; and

wherein after the receiving device continues the receiving of data from the transmitting device that had been transmitting data originally, the receiving device again obtains decryption information with a device 25 authentication process.

7. The data transmit/receive method according to Claim 5,

wherein the receiving device stops receiving when the result of comparing the device-specific information of all devices connected to the bus with the previously read-in device-specific information is that the transmitting device 5 of the previously read-in device-specific information is not present.

8. The data transmit/receive method according to Claim 5,
wherein the bus has a plurality of channels; and

wherein when the receiving device has recognized the transmitting device that had been transmitting data originally by comparison of device-specific information, and when the recognized transmitting device has continued transmitting on a channel that is different from the channel on which it had been transmitting originally, then the receiving device continues the receiving on a different channel.

9. A data transmit/receive method, wherein:

when at least one transmitting device and one receiving device are connected to a bus,

the receiving device reads in device-specific device information from said transmitting device, and then

the receiving device receives encrypted data from the transmitting device via the bus, and obtains decryption 25 information with a device authentication process;

then, when another transmitting device is connected

to the bus while the transmitting device and the receiving device transmit/receive data causing a bus reset, the receiving device reads in device-specific information from the transmitting device that is transmitting data, and
5 compares this read-in device-specific information with the previously read-in device-specific information;

if the transmitting device that is transmitting data is different from the transmitting device that had been transmitting data originally, then the receiving device
10 reads out the device-specific information of all devices connected to the bus, compares the device-specific information with the corresponding previously read-in device-specific information, and recognizes the transmitting device that had been transmitting data
15 originally;

then, if the transmitting device that had been transmitting data originally is transmitting data, the receiving device continues the receiving of data from the transmitting device that had been transmitting data
20 originally, and again obtains decryption information with a device authentication process.